Music Studio Lite

Version 2.2

User Manual

Music Studio Lite is available on the App Store
for all iPhone, iPod Touch and iPad models with iOS 5.1 or later

Table of Contents

Limitations of the Lite version 1

What's new? 2

- Version 2.0 2
- Version 2.0.1 2
- Version 2.0.2 3
- Version 2.0.3 3
- Version 2.0.4 3
- Version 2.0.5 3
- Version 2.0.6 3
- Version 2.0.7 3
- Version 2.1 4
- Version 2.2 4

Quick Start Guide 5

- Playing on the keyboard and pads 5
- Recording a song 6
- Audio tracks and recording 7
- Writing notes 8
- Performance considerations 9
- External Hardware 10
  - Audio recording accessories 10
  - MIDI hardware 10

FAQ (Frequently Asked Questions) 11

Keyboard and Drum Pads 12

- Keyboard 12
  - Scrolling and resizing 12
  - Key velocity 12
- Keyboard Menu 13
  - Play button 13
  - Pause button (iPad only) 13
  - Loop button 13
  - Record button 13
  - Undo button 13
  - Display 13
  - Metronome button 13
  - Tempo Button (iPad only) 13
  - Keyboard layout button 13
  - Drum pads button 14
  - LiveTools button 14

Pitch wheel button 14
Accelerometer button 14
Sustain button 14
Chord buttons 14
Keyboard layout mode 15
Octave buttons 15
Fullscreen button (iPhone only) 15
Keyboard map 15
Keyboard rows button (iPhone only) 15
Key label button (iPhone only) 15
Drum pads 16
Pad edit button 16
Drum pad edit mode 16
Playhead mode 17
Rewind button 17
Transport buttons 17
Navigation map 17
Marker buttons 17

Wave editor 18
Wave editor menu 18
Record button 19
Load button 20
Save button 21
Delete file button (iPad only) 21
Selection buttons 21
Trim button 21
Delete button 21
Insert silence button 21
Reverse button 21
Normalization button 21
Fade buttons 22

Instruments 23
Instrument list 23
User section 23
Volume fader 23
Offset fader 23
Attack fader 24
Release fader 24
Keyboard row selector 24
Preview button 24
Keep attack/release times (iPad only) 24

Sampler 25
Workflow 25
Sharing instruments 26
Sample list 27
Import button 27
Record button 27
Edit button 27
Delete button 28
Settings button 28
Auto Ranges button 28

Looping samples 28

Tracks 29
Track list 29
Track view switch 29
Scrolling and selecting 29
What is a track? 29
Track screen menu 30
Zoom buttons 30
Tempo button 30
Ruler 30
Markers 31
Add bar button 31
Track Editor 32
Track list icons 32
Note area 33
Rearranging tracks and changing the color 33
Filter track 33
Add track buttons 33
Mute button 33
Solo button 33
FX button 33
Edit button 34
Duplicate button 34
Delete button 34
Pan knob/fader 34
Volume fader 34
Bar Editor 35
Selecting 35
New selection button 35
Change selection button 35
Clipboard (copy and paste) 35
Move button 35
Duplicate button 36
Repeat button 36
Transpose button 36
Volume button (iPad only) 36
Quantization button 36
Edit button 36
Delete button 36
Bar insert/cut button 36
Piano roll editor 37
Piano roll view 37
New selection button 37
Change selection button 38
Draw button 38
Move button 38
Duplicate button 39
Repeat button (iPad only) 39
Length button 39
Volume button 39
Quantize button 39
Delete button 39
Quantization popup 40
Note buttons 40
Dotted button 40
Triplet button 40

Quantize note lengths 40
Soft (quantize 50%) 40

Effects 41
Effect routing and busses 41
Common Controls 42
Power button 42
Limit to FX tracks checkbox 42
Default button 42
Preview button 42
Limiter 42
Master gain 42
Device volume 42
Reverb 43
Reverb size 43
Reverb brightness 43
Reverb stereo spread 43
Reverb mix 43
Reverb style 43
Reverb quality 43
Remember settings for each style (iPad only) 43
Filter 44
Resonance and frequency panel 44
Snap back 44
Filter type 44
Filter accelerometer control 44
Pitch 45
Pitch bend semitones 45
Pitch bend sensitivity 45
Pitch bend accelerometer control 45
Pitch bend record mode 45

Projects 46
File list 46
Beats 47
New project button 47
Load button 47
Transfer files to full version 47

Setup 48
General setup 48
Latency 48
Polyphony 48
Lock interface orientation 49
Continuous playhead movement 49
Keep attack/release times (iPhone only) 49
Background audio 49
Keyboard setup 50
Snap to white keys 50
Allow touches between black keys 50
Allow touches on key borders 50
German key labeling 50
Velocity control 50
Mod wheel instead of pitch wheel (iPhone only) 50
Auto quantization 50

Transposition 50
Accelerometer setup 51
Threshold 51
Reactivity 51
Calibration 51
Metronome setup 52
Volume 52
Style 52
Count in 52

Troubleshooting Guide 53
Four steps to resolve most issues 53
Installing does not work 53
The Instruments tab is greyed-out 53
Audio stuttering occurs 53
The audio output sounds noisy 54
Some notes end too early during playback 54

Limitations of the Lite version

- Saving, exporting and sharing is disabled, hence only one song can be created.

  Only 11 instruments are available. The full version features 65 free instruments and 60 more in the in-app shop.

  Visit the Music Studio website for a complete list of instruments.
- The number of audio tracks is limited to 2. Up to 127 tracks (audio and MIDI) can be created in the full version.
- The keyboard is limited to 5 octaves instead of 7.
- 3 Effects are not available: delay, equalizer and amplifier.

- Only 10 beats (instead of 100) are included.
- The full version features iTunes file sharing and a WiFi server for exchanging files with your computer.
- MIDI import and export is disabled.
- The full version features Audiobus.
- No external MIDI hardware is supported. The full version is compatible with the following MIDI devices:
  - CoreMIDI compatible (MIDI in and out)
  - Line 6 MIDI Mobilizer I & II
  - Line 6 Mobile Keys
  - Akai SynthStation 25
  - iRig MIDI
  - Yamaha i-MX1
  - Alesis IO Dock
  - Tascam iU2
  - iConnect MIDI
  - Background apps and virtual MIDI

What's new?

Version 2.0

Released on October 5, 2011

Audio tracks

- Microphone recording
- AudioCopy & AudioPaste
- iPod library and wav/mp3/AAC/ogg file import
- Waveform and audio-region editing

Major new features

- 35 new instruments: 24 synths, 9 orchestral and 2 drum kits
- Drum pads, chord pads and chord programming
- Pitch wheel, filter wheel
- File sharing via email and SoundCloud
- New look & feel

Hardware support

- iRig, iRig Mic, Ampkit Link, Apogee Jam, Alesis IO Dock, iConnectMIDI and Line 6 MIDI Mobilizer II
- Keyboard split point setting
- MIDI Thru
- Muted tracks can now be sent to MIDI OUT
- CoreMIDI compatibility improved

Many new small features

- Volume gradient in the piano roll editor
- Attack offset time configurable for every instrument
- Keyboard sustain button
- Export to compressed format (AAC)
- Export every track into a separate file
- Import songs and midi files (iPad only)
- Performance improvements and small enhancements in all areas

Version 2.0.1

Released on October 18, 2011

- Stereo waveform display
- Bug fixes and performance improvements

Version 2.0.2

Released on October 31, 2011

- HDMI audio output supported
- Blue Mikey supported
- Bug fixes: SynthStation 25 support, AudioPaste

Version 2.0.3

Released on December 16, 2011

- Input monitoring latency greatly improved
- 2 monitoring modes: direct (low latency) and FX (with effects)
- Colored input level indicators with clipping indicators
- WAV file import is no longer restricted to 16bit and 44kHz
- Minimum latency setting for current generation devices
- Bug fixes

Version 2.0.4

Released on February 1, 2012

- Stereo and up to 8 channel audio recording
- Setup option to normalize recorded audio files
- Fix: the amp effect was not applied to input monitoring
- Bug fixes

Version 2.0.5

Released on February 22, 2012

- Audio track playback performance increased
- Bug fixes

Version 2.0.6

Released on March 17, 2012

- Compatible with the new iPad
- Faster app launch
- Bug fixes

Version 2.0.7

Released on April 1, 2012

- Retina display support for the new iPad
- Graphical glitches on the new iPad fixed

Version 2.1

Released on November 1st, 2012

- Sampler (tap the + button in the instrument list's user section)
- Background audio
- Minimum required iOS version is now 4.2
- Bug fix: count-in was always 4 beats, even if the signature was not 4/4
- Bug fix: rare graphics glitches in the drum/chord pad edit modes
- Many more bug fixes, especially regarding the wave editor

Version 2.2

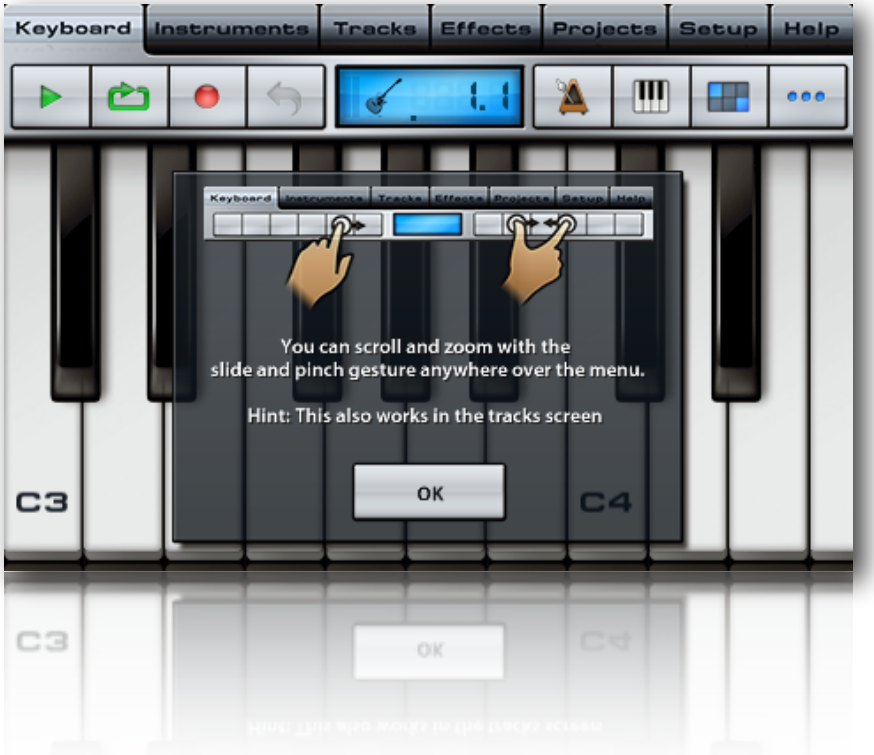
Released in March 2013

- iPhone 5 Retina Display graphics
- 24 audio inputs supported (requires a class-compliant audio interface)
- Minimum required iOS version is now 5.1
- Bug fixes

Quick Start Guide

Playing on the keyboard and pads

You can adjust the size and position of the keyboard by making a slide or pinch gesture anywhere on the menu bar. This also works in the Tracks screen.



- Select the instrument of your choice from the Instruments screen and adjust the attack/release faders to change the fade in/out times.
- Back in the Keyboard screen, tap the "..." button on the right to toggle the LiveTools menu. It contains a switch for the pitch bend wheel (and filter wheel on the iPad) and assignable chord buttons.
- The blue pads button switches to chord pads if you selected an instrument, or drum pads if you selected a drum kit. The pad edit mode allows you to rearrange, add and delete pads, and to assign different chords or drum kit samples to each pad.
- In the keyboard view on the iPhone, tapping the keys button brings up a menu for switching to 2 keyboard rows, changing the key labels, and a keyboard map which allows you to position the keyboard with a single tap. On the iPad, these buttons are always visible.

- Go to the Effects screen and play around with the reverb and delay settings. Adjust the reverb type and size to simulate a specific room. High quality reverb sounds better but may introduce playback stuttering on older devices. Many synths sound great with a delay set to 1/8 and dotted.

Recording a song

Follow these steps to create a song from scratch.

- Open the Projects screen and tap the New button to create a new project.
- Double tap the Beats folder, find a beat of your liking and double tap to load it.

- In the Tracks screen you will see one or more tracks containing the beat you just loaded.
  If it's too slow or to fast, tap the tempo button to change the tempo and signature of the song.

- Select the empty track (or tap the "+ Piano" button to create a new one), then go to the Instruments screen and select your instrument of choice.
  Note: The Keyboard and Instruments screens always apply to the active track, so make sure that your new track is selected.

- In the Keyboard screen (or maybe you switched to pads), tap the record button, wait for the counter to hit 1.1 and start playing. Hit the record or the stop button if you're done, or hit the undo button right away if you made a mistake and want to re-record.

- Switch to the Tracks screen to review what you just recorded. To repeat your melody or beat, tap the bar editor button in the upper right corner, select the bars you just recorded and tap the repeat button in the bottom menu several times.
- Switch back to the track editor and tap the "+ Piano" button to create a new track. Repeat the previous steps to record something on this track.

- Let's assume that your song has a duration of 20 bars and you want to start recording at bar 10. Go to the Tracks screen where you'll notice 2 markers on the ruler. Move the left marker to the 10th bar and recording will always start from there. Tap the loop button to loop the area between the two markers indefinitely.
  Hint: Enable the loop button prior to recording to create a loop. You can even add tracks and switch instrument to record a complex loop in one go.
- Tune the reverb in the Effects screen, try out the delay effect and maybe play around with the other effects. Set the master gain fader in the Limiter screen so that the decibel meters barely hit the red areas for the loudest part of your song.

Audio tracks and recording

There are 4 ways to fill an audio track:

- Record with a microphone or an audio accessory plugged into the headphone jack. The current song can be played during recording. Input monitoring (low latency or with effects) is also selectable.
- Import a song from your iPod library
- Import an existing audio file. Supported formats: wav, mp3, ogg, AAC (m4a)
- AudioPaste from other apps on your device

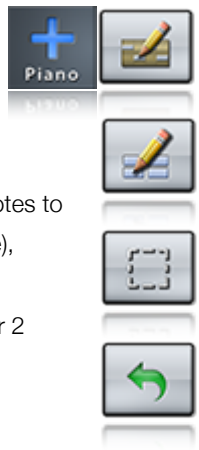
Note that an audio track can only be linked to one audio file. Opening another file in the wave editor will link it to the selected audio track. Editing in the wave editor always changes the original audio file in the *Audio* folder, unless you tap the "Save as" button to save it under a new name. This improves the workflow by not having to save and type filenames every time you change an audio file.

Follow these steps to add an audio track to your song:

- Go to the Tracks screen and tap the "+ Audio" button at the bottom of the track list, which will open the wave editor.
- In the wave editor menu, tap either the Record button for microphone recording
- or the Open button on the right, which will present you with the other options.
- Use the bottom menu in the wave editor to select and modify parts of the audio file.
- In the Tracks screen, the track you just created has been filled with an audio region.
  Tip: Double tapping an audio track takes you right to the wave editor.
- Switch to the bar editor to move, duplicate, repeat, quantize or delete audio regions. In other words, the bar editor treats audio regions as if they were notes.

Writing notes

Notes can be drawn and edited in the piano roll editor, where they are represented as blocks.



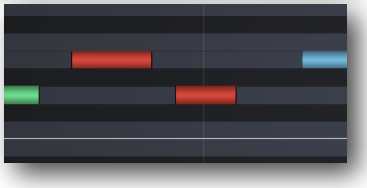
- In the Tracks screen, tap the "+ Piano" button to create a new (MIDI type) track.
- Double tap the track or tap the Edit button to enter the piano roll editor.
- Tap the Draw button and select the desired note length. Move the crosshair and tap OK to draw a few notes. Tap the OK button in the lower right corner when you're done.
- By default, all notes are selected and every edit operation will modify all notes. Draw a rectangle over the notes to select a few of them, then try out the buttons in the bottom menu: move, duplicate, length, velocity (volume), quantize and delete.
- The undo button in the top menu is handy if you made a mistake. To redo, tap and hold the undo button for 2 seconds and tap *Redo*.

Quantization

It's very hard to play in perfect timing. Notes you played on the keyboard will often be off by a fraction of a beat, that's where quantization comes in handy. It's best to try out different quantization parameters (1/8, then 1/16, maybe 1/32) and hit the undo button if you are not satisfied with the result.

Red notes

Congruent notes, i.e. notes that are placed at the same position and have the same length, are displayed red in the piano roll editor. In most cases they are unwanted and should be deleted because they result in the note being played back with increased volume.



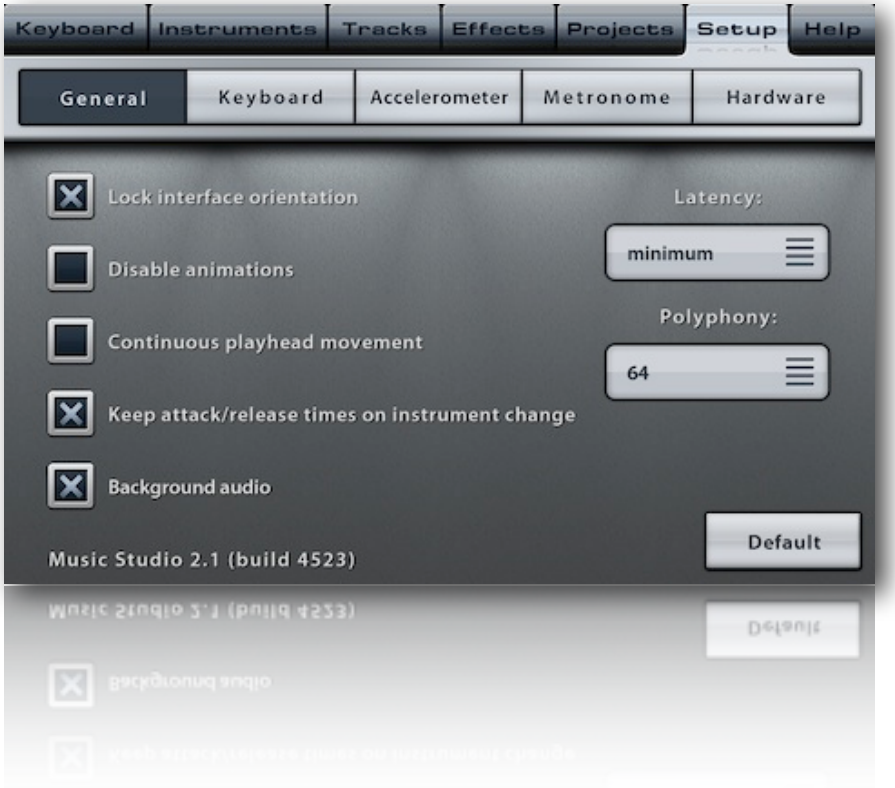
Tip: Legato

If you want a melody sound legato, increasing the release time in the Instruments screen is often faster than changing the length of all notes.

Performance considerations

The more complex your song gets, the more processing power Music Studio requires. This can lead to audio stuttering on older device, which can be counteracted. These factors have the most impact:

- **Reverb quality**
  Set it to low on older devices, and to high before you export a song to wav or AAC format.
- **Polyphony**
  Lower the polyphony in the general settings. While a 2011 device can easily cope with 32 or 64 samples at a time, a 2008 device would have to be restricted to playing no more than 8 samples simultaneously in order to prevent stuttering.
- **Latency**
  While *ultra low* provides the best possible keyboard feedback, it is also likely to introduce audio stuttering. Set it to very low or low for a good tradeoff, or even higher if you are only editing tracks and writing notes. Low latency is only important if you are playing on the keyboard or the pads.
- **Animations**
  Disabling the animations in the general setup can improve the performance. The setting *Continuous playhead movement* should be enabled only on last generation devices.
- **Release time**
  In order to keep the polyphony low, reduce the release time of the tracks as much as possible on older devices. For example, an guitar playing a fast riff with 1 second release time can drive up the polyphony to 32 or 64. Lowering the release time to 0.1s has a positive impact on performance with almost no impact on quality, depending on the music of course.



External Hardware

This is an overview of most of the external audio and MIDI hardware supported by Music Studio.

Audio recording accessories

- **Apple earphones** with microphone for mono recording through the headphone jack
- **iRig**: mono instrument (guitar and bass) recording through the headphone jack
- **iRig Mic**: mono microphone recording through the headphone jack
- **Ampkit Link**: mono instrument recording through the headphone jack
- **Apogee Jam**: mono instrument recording through the dock connector (compatible with iPhone 4, 4S and all iPad models)
- **Alesis IO Dock** (iPad 1 and iPad 2 only)
  The IO Dock has 2 audio inputs for stereo or 2x simultaneous mono recording.
- **Sonoma Guitar Jack** (compatible with iPhone 3G, 3GS, iPod Touch 2nd and 3rd generation only)
- **Sonoma Guitar Jack 2** (compatible with iPhone 3GS and later, iPod Touch 2nd gen. and later, and all iPad models)
- **Line 6 Mobile In** (compatible with iPhone 4 and later, and all iPad models)
- **Tascam iU2** (compatible with iOS 4.3 and later)
- **Tascam iM2** (compatible with iPhone 4, 4S, iPod Touch 4G, iPad and iPad 2)
- **Tascam iXZ**
- **Blue Mikey 2.0** (iPod Touch up to 3rd generation only)
- **Apple Camera Connection Kit USB adapter** (iPad only)
  Some mono USB microphones (like the Samson Meteor Mic or the Logitech Desktop Mic) work when connected to the CCK USB adapter.
- **RME FireFace UCX:** connected via Apple's CCK (iPad only) and set into CC mode, it provides 18 input channels, which can be recorded simultaneously as 18 mono or 9 stereo files.
- **Focusrite Scarlett 18i6:** connected via Apple's CCK (iPad only), it provides 18 input channels
- **CoreAudio:** Music Studio supports most CoreAudio compatible (class compliant) devices

MIDI hardware

MIDI Hardware is not supported by the Lite version. The full version is compatible with the following devices:

- CoreMIDI (MIDI in and out)
- Line 6 MIDI Mobilizer I & II
- Line 6 Mobile Keys
- Akai SynthStation 25
- iRig MIDI
- Yamaha i-MX 1
- Apogee Jam
- Ampkit Link
- Alesis IO Dock
- iConnectMIDI
- Tascam iU2
- Background apps and virtual MIDI

FAQ (Frequently Asked Questions)

For support-related discussions, visit the forum at the Music Studio website.

Can I record my electric guitar/bass or vocals?

Yes, but an external microphone or an audio interface for iOS is recommended. Music Studio even lets you record both at the same time if you have a stereo audio interface for iOS.

However, it doesn't have an amp/box model effect for guitars. The distortion effect is only meant for synths. For guitar recording, it is recommended to record the output of your amp, or use another app with amp models for recording (e.g. Amplitube) and AudioCopy / AudioPaste the file into Music Studio for editing and sequencing.

How to maximize the sound quality of the instruments?

To get the most out of the high quality studio-recorded instruments, use earphones, headphones or external speakers. Most instruments are designed for a specific tonal range, an E-Bass sounds as unreal in the 4th octave as a flute in the lowest octave. Some instruments also benefit from a higher or lower release time.

- Wind and brass instruments sound best with a low release time and a large reverb.
- A great effect for synths is to set the delay to 1/8th and dotted.
- String instruments sound best with a medium attack time (around 0.5s) and a high release time.
- Guitars, plucked and percussion instrument can be played *one-shot* with a high release time of about 1s.

If I select and edit bars in the bar editor, why are some notes ignored?

Selected notes are colored dark blue. If you select a bar but a note starts a few ticks earlier than this bar, it will not be selected. If possible, quantize the track, thereby aligning the notes to simplify further editing.

Why are the drum kit's sounds arranged in such a strange way?

This "strange way" is called the "General MIDI Level 1 Percussion Key Map". It is commonly used on nearly every hardware keyboard/synthesizer to retain full MIDI compatibility.

Why is the default instrument volume 80% and not 100%?

This way you don't have to change all the other track's volumes if you want one track to be louder.

Why doesn't the preview button play a nice melody?

Because it would be distracting for a musician who has a melody in mind while composing music.

Which features will be included in future updates?

Please visit the forum on the Music Studio website for feature-related discussions.

Keyboard and Drum Pads

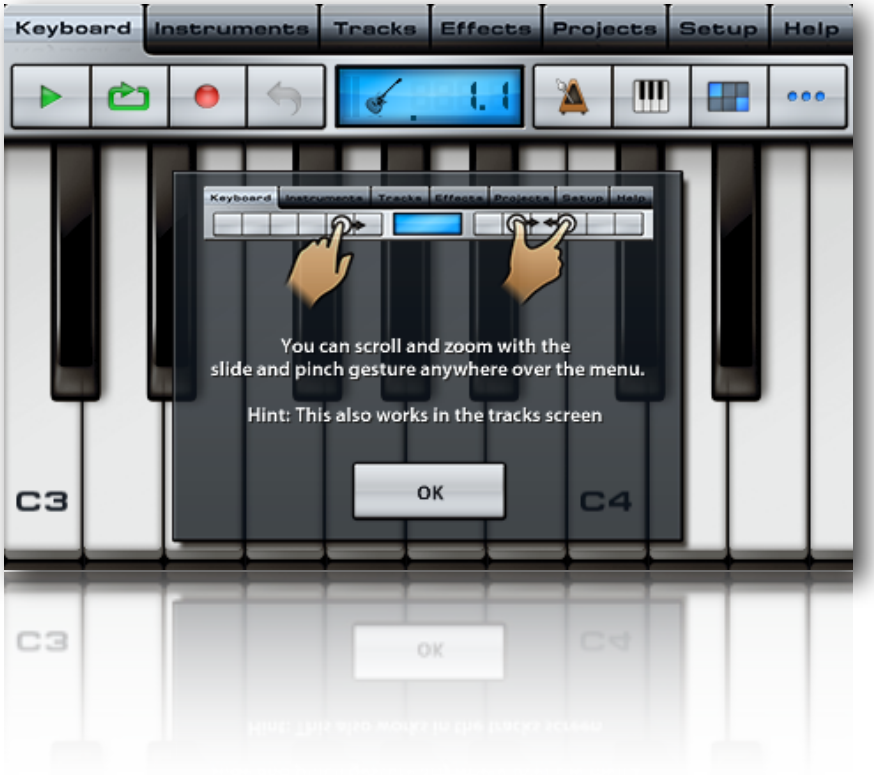
Keyboard

Music Studio features a 85-key clavier (limited to 60 keys in the Lite version) capable of handling up to 5 simultaneous touches (10 on the iPad). Not every instrument has the full tonal range, hence the number of playable octaves varies from instrument to instrument.

If you are uneasy with the way the keys react to your touch input, the keyboard setup offers some handy preferences.

Scrolling and resizing

The keyboard position and width can be adjusted via the scroll and pinch gestures. Either tap the keyboard layout button or simply do the gesture on the top menu bar: move one finger left or right to slide the keyboard, pinch with two fingers to adjust the key width.



Key velocity

In the keyboard setup, enable Velocity to control the note volume with the touch position, the accelerometer or the mod wheel.

Keyboard Menu

Play button

The play button toggles playback of the song. Stop rewinds to the left marker.

Pause button (iPad only)

The pause button simply pauses playback and doesn't rewind.

Loop button

Tap the loop button to toggle looping the song (or more precisely, the area between the markers).

Record button

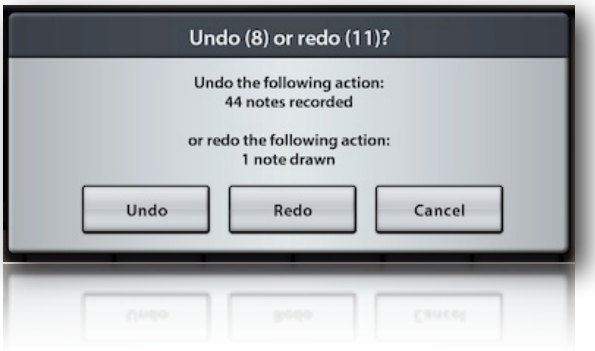
The record button start or stop a new recording. Tap it, then wait for the counter to hit 1.1 (this is called count-in) and start playing. Hit the record or the stop button if you're done, or hit the undo button right away if you made a mistake and want to re-record.

Note: recording is always done on the selected track. To record with another instrument on top of your current song, create a new track, select it and record.

Undo button

The undo button deleted the notes you just recorded, or reverts the song to the state prior to the last edit.

Tip: Hold the undo button for 2 seconds to display a popup with the possible undo/redo actions.



Display

The LCD contains gain bars to indicate the volume, the icon of the selected track's instrument and the position of the playhead within the song. The number format is measure-dot-beat, so "7.2" means that the playhead is in the 2nd beat of the 7th bar (measure). The small dot on the bar below the numbers also indicates the playhead position. Tap the display it to enter the playhead mode.

Metronome button

Tap the metronome button to toggle the metronome during playback or recording. Its state is remembered separately for playback and recording. Per default, the metronome is enabled only during recording. Metronome volume and style can be set in the metronome setup.

iPhone only: tap and hold the metronome button to bring up the tempo popup.

Tempo Button (iPad only)

The tempo button brings up the tempo popup where the song tempo and signature can be set.

Keyboard layout button

On the iPad, this button has a zoom icon because the keyboard layout mode allows you to scroll and zoom the keyboard. On the iPhone, the keyboard layout mode also holds the keyboard rows and key label settings, hence the keys in the icon.

Drum pads button

The pads button toggles between keyboard and drum or chord pad input. See the section about drum pads.

LiveTools button

The LiveTools menu contains the pitch wheel, sustain and chord buttons.

Pitch wheel button

On the iPad, both the pitch bend wheel and the mod wheel are always visible. On the iPhone, there is only space for one wheel and there is an option in the keyboard setup to switch between pitch and mod wheel.
The pitch bend wheel's range can be set in the Effects screen.
The mod wheel controls the filter effect, but can be set to control the keyboard velocity in the keyboard setup.

Accelerometer button

The accelerometer button is located below the pitch bend wheel. It toggles the accelerometer input, which can be recorded too. By default, it enables the pitch bend effect (and disables the pitch bend wheel in turn). Tilt your device to bend the pitch of the currently played notes. The filter effect can also be configured to react to the accelerometer.

Sustain button

The sustain button in the LiveTools menu holds all the keys that are currently pressed until it it released again. It simulates the right pedal of a grand piano.
Note: MIDI CC64 events are not recorded, but the note lengths are increased if you use the sustain button during recording.

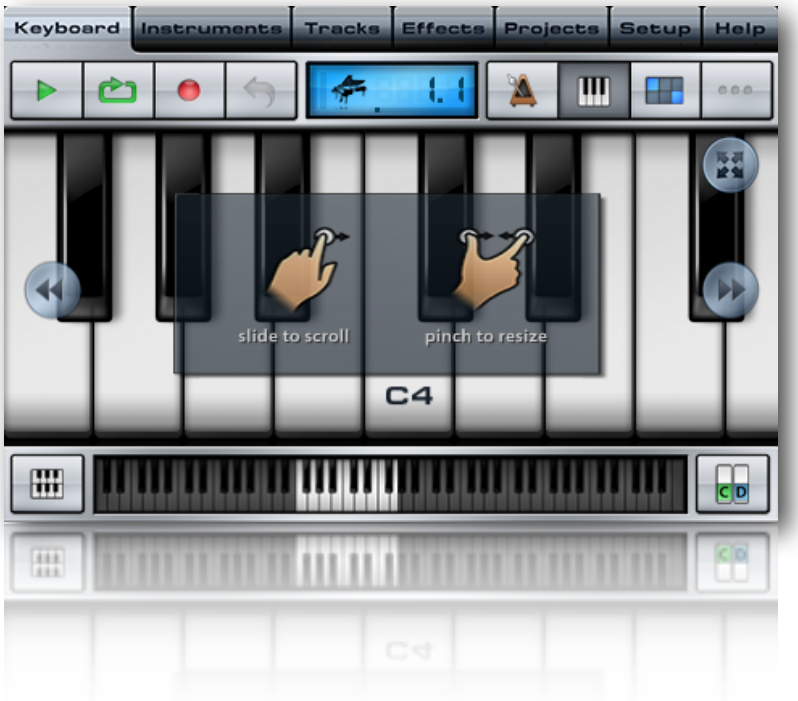
Chord buttons

Each chord button can be configured to not only play chords, but any number of notes at once. Touch a chord button to play it like a key.
To assign a chord, tap the SET button, then tap one of the chord buttons. The keys assigned to this chord button are highlighted blue. Tap a key to assign or remove it from the chord. When you're done, tap the set button again.

Tip (iPad only): if chord pads are enabled, tap a chord pad (with SET enabled) to assign it to the selected chord button.

Keyboard layout mode

Tap the button with the keys to enter the keyboard layout mode, where the keyboard rows can be scrolled and resized anywhere on the screen.



Octave buttons

The left and right octave buttons quickly scroll the keyboard one octave (12 semitones) down or up.

Fullscreen button (iPhone only)

Tap the fullscreen button to switches to the full screen keyboard mode. Sliding and pinching in the top portion of the screen scrolls and resizes the keys. Tap the button in the upper right corner to exit the fullscreen mode.

Keyboard map

The map illustrates which part of the keyboard is currently visible. Slide or tap it to quickly scroll the keyboard.

Keyboard rows button (iPhone only)

Tap the keyboard rows button to toggle between one and two keyboard rows.
See this section about the track created for the lower keyboard row.
On the iPad, this button is always visible in the Keyboard screen's menu bar.

Key label button (iPhone only)

The key label button allows you to select one of the 4 key label modes: off, C only, all keys labeled, and colored key
On the iPad, this button is always visible in the Keyboard screen's menu bar.

Drum pads

Depending on the instrument selected, the pads either play drum samples or chords.

Pad edit button

The pad edit button makes all the pads wiggle. Tap and move a pad to rearrange the pads, or tap the X in the corner of a pad to remove it. The Plus button in the lower right corner adds a new pad, until the maximum number of pads is reached.

Drum pad edit mode

If a drum kit is selected, each pad will play a different sample of the kit. Tap a pad to display the list of samples, where the ones that are already mapped to a pad are greyed out.

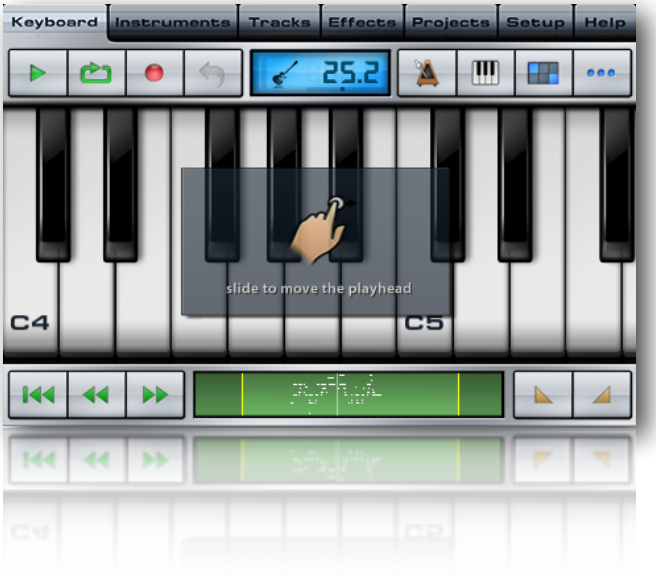
Chord pad edit mode

If an instrument (as opposed to a kit) is selected, each pad plays a chord. Tap a pad and the bottom menu indicates the chord's key, octave, quality and inversion. These parameters can be configured arbitrarily.

Tip (iPad only): if the LiveTools menu with the chord buttons is visible, tap the SET button in the menu, tap a chord button, then tap a pad to assign its chord it to the selected chord button.

Playhead mode

The playhead mode can be accessed by tapping on the display in the Keyboard or Track screen menu. It allows you to adjust the position of the playhead and to set the markers. Use the controls in the bottom menu or simply slide your finger anywhere on the screen to adjust the position of the playhead.



Rewind button

Rewinds the playhead to the left song marker. Tap it a second time to rewind to the beginning of the song.

Transport buttons

Rewind and forward the playhead position by exactly 1 bar (measure).

Navigation map

Tap or slide on the map to position the playhead anywhere in the song. The song markers are depicted by yellow lines, the areas outside the markers are darkened. The map also displays the current track's notes as white dots and lines.

Marker buttons

Tap a marker button to set the left or the right song marker to the current playhead position. The markers must be at least 1 bar apart.

There are several reasons why markers are handy:

- Recording always starts at the left marker, which makes punch-in recording possible.
- The loop button loops the section between the markers.
- When you export a song into wav or AAC format , you can choose to only export the range between the markers.

Wave editor

The wave editor can be entered by double tapping an existing or adding a new audio track in the track list.
It is also used for editing samples in a user instrument.

There are 4 ways to fill an audio track:

- Record with a microphone or an audio accessory plugged into the headphone jack.
- Import a song from your iPod library
- Import an existing audio file. Supported formats: wav, mp3, ogg, AAC (m4a)
- AudioPaste from other apps on your device

An audio track can only be linked to one audio file. Opening another file in the wave editor will link it to the selected audio track. Editing in the wave editor always changes the original audio file in the Audio folder, unless you tap the “Save as” button to save it under a new name. This improves the workflow by not having to save and type filenames every time you change an audio file.

Wave editor menu

The menu buttons to the left to the display (for playback and undo) and the zoom buttons are the same as in the Keyboard screen. The loop button toggles looping, but in the sampler mode it toggles the loop markers to set the looped sample range.

Record button

Tap the record button to open the audio recording popup for recording a wav file into the *Audio* folder.

Supported hardware

You can record from the internal microphone, or almost any microphone connected to the head-phone jack or dock connector. Many USB accessories or USB microphones connected to the Camera Connection Kit's USB adapter (iPad only) also work.

Filename textfield

By default, a file name that doesn't exist yet in the Audio folder is displayed. Tap it to change the name of the file you are going to record.

Input levels

Tap anywhere on the input level bars to reset the clipping indicators. The red clipping indicators light up if the stereo input level bars hit full gain. This means that clipping has occurred and there probably will be a clipping noise in the recorded file.
Note: Only the levels of the first 8 input channels are displayed.

Monitoring

Input monitoring outputs the input audio signal before and during audio recording. There are 2 modes:

- **Direct monitoring** skips the effect bus and directly outputs the input signal with minimum latency, which is even lower than the *ultra low* latency setting.
- **FX monitoring** routes the incoming audio signal through the effect bus of the selected track. The latency depends on the selected latency in the setup. This way you can listen with headphones to what you sing or play before and during recording, exactly as it will sound on the track.

Note: to prevent feedback, input monitoring is only available if headphones or an external microphone are connected.

Channels

With the internal microphone, only mono is available. If an external microphone or CoreAudio device with more than 1 channels is connected, the following options are available:

- Mono L/R: The left or right mono channel.
- Stereo: Records both channels into one stereo file.
- 2-24 mono files: Records all the available mono channels simultaneously into separate mono files.
- 2-12 stereo files: Records pairs of 2 mono channels simultaneously into stereo files.

Play song during recording

Listening to the song during recording is essential for singing or playing along. Situations where you wouldn't enable this checkbox are if you start your song with an audio recording, or if you record snippets which will be used in multiple songs independently of the tempo.

Metronome button

Enable the metronome button to listen to the metronome during recording.

Note: If count-in is enabled in the metronome setup, it will kick in during audio recording too.

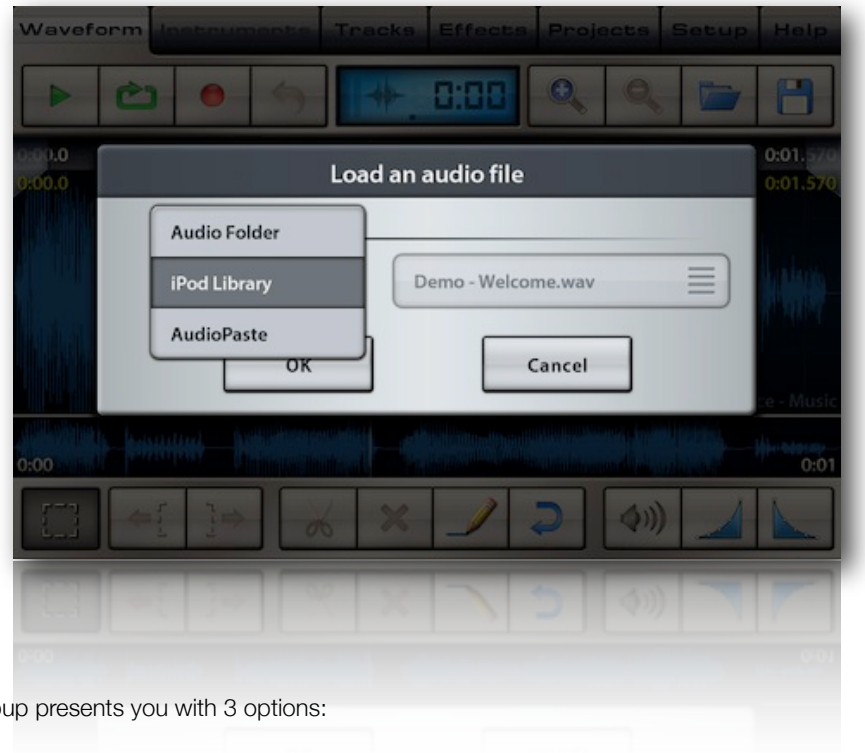
Record button

Tap the record button to start and stop audio recording.

Tip: Keep an eye on the input levels. Increase the distance to the microphone if they reach 100%.

Tip: If you want to trash the recording and re-recording, tap the undo button right after recording to delete the file.

Load button



The load audio file popup presents you with 3 options:

- **Audio folder**

  The *Audio* folder holds all your audio recordings and can also be browsed in the Projects screen.

- **iPod library**
  All the songs you synced with iTunes or downloaded from the iTunes Store are stored in the iPod library. Tapping the OK button shows the contents of your iPod library. Importing the file from the compressed format into the wav format can take up to a few minutes on older devices.
- **AudioPaste**
  The Sonoma AudioPaste clipboard holds all the audio material that you placed there from other apps with AudioCopy or the PasteBin.

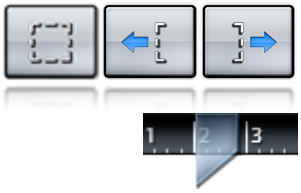
Save button

To save the current audio file under a new name, tap the save button and enter a file name. The original audio file will remain unchanged.
Tip: In many cases, enabling the "**Save selection only"** checkbox is more handy than using the trim button.

Delete file button (iPad only)

The delete button removes the current audio file from the *Audio* folder permanently. Undo is not possible after this action.

Selection buttons



Tap the leftmost selection button and slide over an area in the wave form to select it. Use the markers on the ruler to adjust the selection, or tap one of the other two selection buttons to extend the selection to the beginning or the end of the audio file.

Trim button

The trim button cuts the areas outside of the selection away from the audio file.

Delete button

The delete button cuts the selected area from the audio file.

Insert silence button

Place the playhead at the point where you wish to insert silence, by moving your finger on the ruler. Then tap the insert silence button and enter the length in seconds.
Tip: tap and slide your finger on the display to quickly adjust the length of the silence.

Reverse button

The reverse button reverts the selected area of the audio file, so that it sounds backwards when played back.

Normalization button

Normalization modifies the audio file's volume to that the peak is at the desired percentage of the maximum volume. Here are a few examples:

- Normalizing a quiet recording to 100% will boost its volume without clipping the wave form.
- If a quiet recording contains a spike that has a peak value of 100%, normalizing to 100% won't change the file.
- Normalizing to 50% will set the peak to 50% of the maximum available volume. Repeating this procedure won't change the file because the peak will already be at 50%.

Limiter (soft knee)

The limiter checkbox becomes available at a percentage of over 100%, where clipping would occur. Applying a soft knee limiter prevents clipping (crackling), but it introduces some artifacts that reduce the quality of the audio file.

Fade buttons

Tapping the fade in or out button unfolds a sub menu with 3 choices for the gradient: slow, linear, or fast. The two most common cases are fading in the beginning and fading out the ending of an audio file. Try out the different gradients and tap the undo button in between.

Instruments

Instrument list

Change the selected track's instrument by tapping an instrument from the scrollable list. The list can be filtered with the category buttons at the bottom (on the iPhone the buttons are on the left side of the screen).

User section

Tap the User button to display all your custom instruments and the Create (+) button in this section to add a new instrument with the sampler. A small edit icon sits in the upper right corner of the selected user instrument. It displays a menu with four buttons:

- **Edit**: enters the sampler screen.
- **Delete**: removes the instrument from the list and from the Instruments folder. Be careful, this action cannot be undone.
- **Duplicate**: creates a copy of the selected instrument.
- **Save parameters**: saves the current positions of the offset, attack and release faders as defaults for this instrument.

Volume fader

The volume fader sets the current track's gain from 0% to 100%. It has the same function as the volume fader in the track editor.

Offset fader

The attack offset is the point in the sample where playback begins when a note is triggered. Imagine how a piano would sound without the loud attack at the beginning. Moving the offset fader to 10% cuts away the beginning (i.e. the first 10%) of the

sample and you will hear a very strange piano sound. This can be very useful for transforming a slow synth into a lead sound, or cutting the attack of any instrument.

Attack fader

The attack fader sets the attack time in seconds, which is the fade-in time, i.e. how long it takes for the instrument to reach its maximum volume. Use longer attack times for soft sounds like strings and synth pads.

Release fader

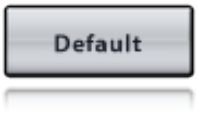
Set the release time in seconds with the release fader. It's the fade-out time, i.e. how long the sound fades out after a note is released. Use longer release times to simulate legato or one-shot for drum kits and percussive instruments.

Keyboard row selector

Tap the lower row to switch to 2 keyboard rows. This selector then allows you to switch between the rows to select different instruments for the upper and lower keyboard row.
See this section about the track created for the lower keyboard row.

On the iPad, a lock beside the keyboard row selector indicates if the two keyboard rows are linked. If the lock is closed, the settings (instrument, volume, attack and release time) of both keyboard rows will be held in sync. Every change you make will affect both rows (meaning two tracks).

Default button



The default button resets the four faders to the instrument's default preset.
Note: If "Keep attack/release times" is disabled, this button is automatically pressed each time you select an instrument.

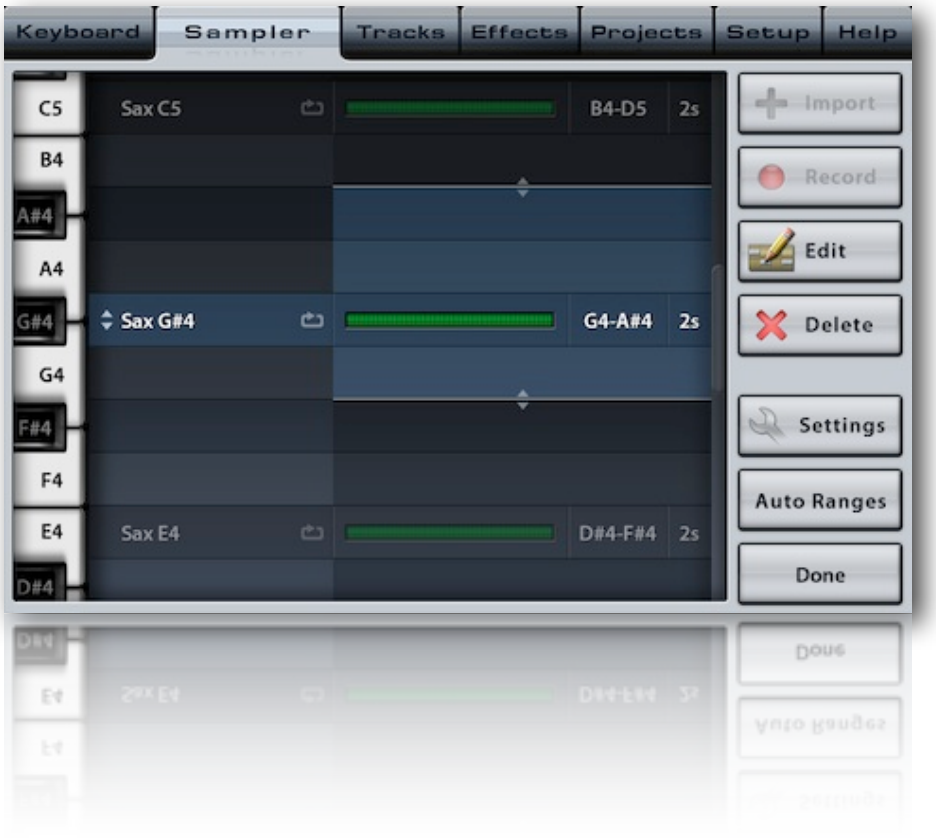
Preview button

Tap the preview button multiple times to hear different notes played with the current instrument.

Keep attack/release times (iPad only)

Enable the *Keep attack/release times* checkbox to freeze the state of said faders while browsing the instrument list. If this checkbox is disabled and you select an instrument from the list, its default attack and release time will be applied.
On the iPhone, this setting can be found in the general setup.

Sampler



Workflow

The sampler's purpose is to create custom instruments or kits from existing audio files or from audio recordings. A few usage examples:

- Sample another iOS app that supports AudioCopy: record a few notes in the other app, AudioCopy them and AudioPaste them into the sampler.
- Create a kit consisting of vocal samples or noises that you record directly in the sampler with a microphone. Your sounds can be triggered with the drum pads.
- Sample your guitar or bass by recording a few notes with an audio interface for iOS (e.g. Apogee Jam or iRig) or a microphone.
- If you already have audio files or an instrument or a kit, you can transfer them into Music Studio and load them into the sampler. Many websites offer royalty-free samples. WAV, MP3, OGG, M4A and ZIP files can be directly opened from Safari or Mail with Music Studio.

Follow these steps to create an instrument:

1. Tap the User button in the Instruments screen.
2. Tap the + Button at the end of the list.
3. Enter a name and select the instrument or the kit icon, then tap OK.
4. Select a key which you want to assign a sample to. You can of course always move the sample to another key later.
   For kits it is recommended to start at C2 and fill the keys upwards without gaps.
   For instruments, it is vital that the key matches the sample's pitch. If you are going to record a high D, select D5 for example. If you are going to load an audio file that plays a low F, select F1 or F2.

5. Tap import or record to add a sample.
6. Repeat steps 4 and 5 for every sample that you want to add.
7. When you are finished adding the samples, tap the Auto Ranges button.
8. To test your instrument, switch to the Keyboard screen.
9. To edit a sample in the wave editor, double tap it.
10. Tap the Done button to exit the sampler and return to the instrument list.

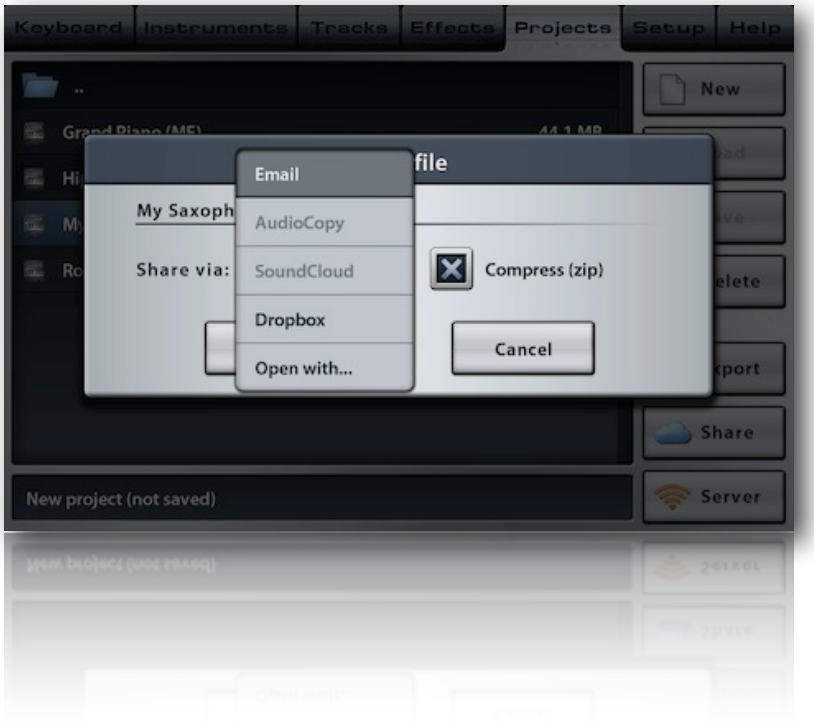
Consider these guidelines to decide the number of samples to add to an instrument:

- In theory you could only add 1 sample for the whole instrument. However, the sound quality suffers when you play a key that is far away from the base key on the keyboard. Depending on the instrument it is recommended to use a minimum of 1 sample every 2 octaves, or up to 3 samples per octave.
- Consider the size of your samples. Smaller instruments load faster. Big instruments may not be loadable at all on older devices. You can see your instrument's size by selecting it in the Instruments folder in the Projects screen.
- It is good practice to keep your instrument's size under 15mb. Adding samples, several seconds in length, for every single key is definitely too much. For a kit consisting of very short samples, having 5 octaves full of (60) samples is okay.
- Keep in mind that a mono sample only takes up half the space of a stereo sample of the same length. Always cut your samples to the minimum length required.

Sharing instruments

All of your instruments are stored as .instr files in the Instruments folder. There are several options of sharing instruments with other users, available **only in the full version**:

- Select the instrument in the Projects screen, tap Share, select Dropbox or Email. It is recommended to enable the *"Reduce the file size (zip)"* checkbox to reduce the amount of uploaded data.
- Or use iTunes File Sharing to save the whole *Instruments* folder to your computer.
- Or use the WiFi server to access the *Instruments* folder in a browser on another device in the same WiFi network. If it's another iOS device, you can open instrument files with Music Studio directly from within Safari.



Sample list

The sample list is a vertical keyboard, where every row represents a key that you can assign a sample to. Every sample has the following parameters:

- **Base key**

  This is the row that you tapped before loading or recording the sample. When the base key is played on the keyboard, the sample is played with its original pitch. The base key can be moved by tapping and sliding the move icon vertically.

- **Key range**

  The key range defines the range of the keyboard where the sample is triggered. It can be modified by moving the key range buttons vertically. The key range is indicated by the colored area in the right section of the sample list and is written in the sample's row. Every sample is automatically assigned a unique color to make its range distinguishable from other samples. It is recommended to use the Auto Ranges button to automatically set all the key ranges. For kits, the key ranges are not important unless you deliberately want to pitch a sample. Key ranges of two samples can overlap.

  Let's take for example a sample that has C3 as the base key and a key range from G2 to F#3. When a key within this range, but other than the base key is played on the keyboard, the sample's pitch is changed. In theory you could only add 1 sample for the whole instrument. However, the sound quality suffers when you play a key that is far away from the base key on the keyboard.

- **Volume**

  Adjust every sample's volume with the volume bar so that all samples have the same volume relative to each other. If the range of the volume bar is insufficient, double tap the sample and use the wave editor to modify the volume.

- **Loop range**

  See the section Looping samples.

Import button

Double tap an empty row in the sample list or tap the import button to bring up the import popup. It allows you to select an audio file from the *Audio* folder or to AudioPaste a sample that was AudioCopied with another app. This popup window is identical to the one in the wave editor, the only difference being that the iPod library option is not available in the sampler.

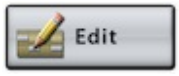
Record button

Tap an empty row in the sample list and tap the record button to bring up the recording popup, which is identical to the one in the wave editor. The recorded audio file will be placed in the *Audio* folder (as a backup) where it will remain unchanged even if you edit it in the sampler or remove it from the instrument.

Edit button

Double tap an existing sample or tap the edit button to enter the wave editor. When you are done editing the sample, tap the Sampler tab again and your edits will be applied to the sample in the instrument.

Note: If you loaded an audio file from the *Audio* folder as a sample, the original file will not be modified.



Delete button

Select a sample in the sample list and tap the delete button to delete it from the instrument.

Note: If you loaded an audio file from the *Audio* folder as a sample, the original file will be left in place.

Settings button

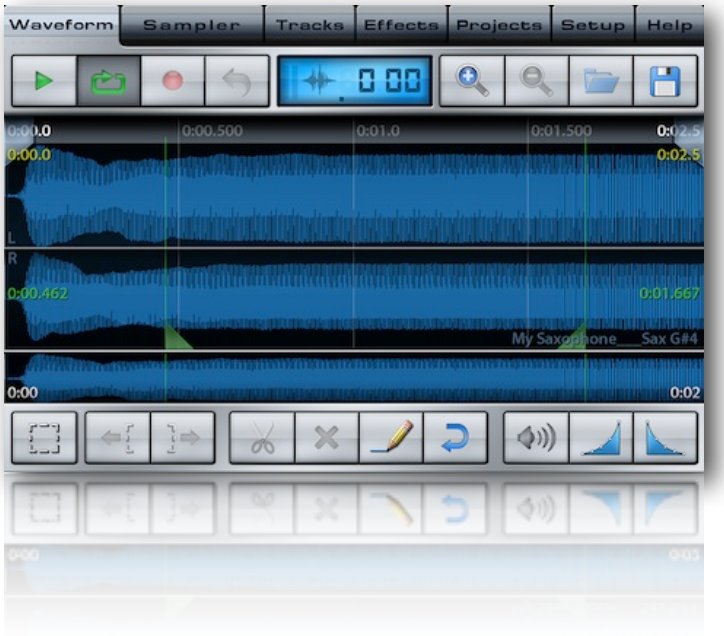
Tap the settings button to bring up a popup window where you can edit the instrument's name and icon. The icon also defines the instrument's type: chromatic instrument (e.g. a piano) or kit (e.g. a jazz drum kit or a set of vocal samples). The type determines if the chord pads (chromatic instrument) or the drum pads (kit) are displayed in the keyboard screen's pad mode.

Auto Ranges button

Adjusting all your sample's key ranges properly can be time consuming. The auto ranges button does the work for you by automatically setting every sample's key range. For example, if one sample has the base key C3 and the other G3, the middle of the space between samples is between D#3 and E3. The auto ranges button will set the first sample's upper range to D#3 and the second sample's lower range to E3.

Looping samples

Tap the loop button in the wave editor to toggle the loop markers which define the range of the sample to be looped. A short crossfade is automatically applied when a looped sample is played, to avoid crackling noises and ensure a smooth transition from the loop-out to the loop-in point.



Tracks

Track list

Track view switch

This is the most important button in the Tracks screen. It switches between the track editor and the bar editor. These two editing modes are the key to Music Studio's fast and easy editing workflow.

The track editor is designed to edit whole tracks and mix the song by setting the volume, pan and the effect bus.
Use the bar editor for quick, bar-wise editing of the song. Select a range of bars (measures) and move, duplicate, repeat, transpose, quantize or delete it.

Scrolling and selecting

Analogous to the Keyboard screen, sliding and pinching on the menu bar scrolls and zooms the song.
Only one track can be selected at a time. The keyboard will play this track's instrument, the record button will record on this track, and all the changes you make in the Instruments screen will apply to it. You cannot delete the first track, the maximum number of tracks is 127. If you switch to two keyboard rows, a separate track for the lower row is created (more on this topic here).

What is a track?

Think of a track as one instrumentalist in a band or an orchestra. It holds recorded notes, one instrument and some parameters. There can be multiple tracks with the same instrument but different parameters (like volume, pan, attack and release time, effect bus, color).

Note: A recorded note places 2 events on a track: key-down and key-up (also called note-on and note-off). The position of an event is stored with a resolution of 48 ticks per beat, which equals to 192 ticks per bar at a signature of 4/4, meaning that the shortest note can be a 1/192th.

Track screen menu

The menu buttons to the left to the display, and the LCD featuring the playhead mode, are the same as in the Keyboard screen.

Zoom buttons

On the iPhone, the zoom button toggles the zoom mode, where the view can be scrolled and resized anywhere on the screen. Tap or slide on the map at the bottom to quickly position the view. The map also displays the markers as yellow lines.

On the iPad, there are 3 zoom buttons for zooming in, out and fully out with one tap.

Tempo button

The tempo button brings up the tempo popup where the song tempo and signature can be set.

Tap or hold the +/- buttons to change the tempo in the range of 40 to 240 bpm (beats per minute) with a precision of 0.1 bpm. A faster way to set the tempo is to **tap and slide** the value on the display. An alternative tempo input method is to tap the **Tap Tempo** button with the desired tempo at least two times. Hold down the **Preview** button to hear a metronome preview of the current tempo and signature. The **signature** can be set to a value between 2/4 and 7/4. Most songs have a signature of 4/4, meaning that 1 bar has 4 beats (i.e. the length of 4 quarter notes).

The tempo is also displayed to the left of the ruler. Double tap it to open the tempo popup.

Ruler

The numbers and the vertical lines on the ruler indicate the measures (bars). The short vertical lines are the beats within each bar. The ruler also holds the playhead (white vertical line) and the two markers. Slide anywhere on the ruler to position the playhead. As you scroll the playhead left/right, a preview of the current position of the playhead is played back.

Markers

The left and right song makers are located on the ruler and can be moved. The markers must always be positioned at least 1 bar apart from each other. An alternative method for positioning the markers is via the playhead mode.

There are several reasons why markers are handy:

- Recording always starts at the left marker, which makes punch-in recording possible.
- The loop button loops the section between the markers.
- When you export a song into wav or AAC format , you can choose to only export the range between the markers.

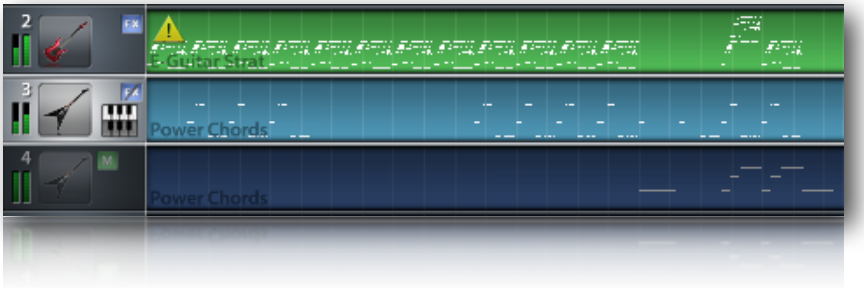
Add bar button

The plus icon appears on the right side of the screen if the ruler is scrolled to the end of the song. Tap it to extend the song by one bar.

Track Editor

Tap the left side of the track view switch or the Tracks tab to display the track editor. It is designed to edit whole tracks and mix the song by setting the volume, pan and the effect bus.

Track list icons



Each track contains a number of icons:

- **Volume bars**
  The output gain sent to the left and right channels is indicated by the green volume bars, allowing you to see the volume and pan for each track at one glance. If the pan is centered, both bars have the same height.
- **Track number** and **instrument icon**
- **Mute / solo / FX** bus icons (see below)
- **Keyboard row icon**
  The row icon is only visible if 2 keyboard rows are enabled, indicating which keyboard row the track is assigned to. If you switch to two keyboard rows, a separate track for the new row will be created. Selecting a track will always assign it to the upper row. However, the track assignment of the lower row cannot be changed. If you switch back to one row, the lower row's track will be deleted if nothing has been recorded on it.
- **Warning triangle**
  The yellow warning sign indicates that some notes on the track are outside the instrument's note range. Tap it to see more information. Notes outside the range will be played back but may sound atypical for this instrument, since every real instrument has a limited range of playable notes.

Note area

Notes are displayed as white lines and dots in the note area of each track.
Tip: Double tap any region of a track to enter the piano roll editor.

Orange notes

Congruent notes, i.e. notes that are placed at the same position and have the same length, are drawn orange in the track list. In most cases they are unwanted and should be deleted because they result in the note being played back with increased volume.

Rearranging tracks and changing the color

Tap and hold a track's instrument icon for 1 second. A box will appear, instructing you to slide vertically to move the track or horizontally to change the track's color.
Note: The order of the tracks is especially important if a external MIDI hardware is connected and the MIDI IN or OUT channel is set to *TRACKS*.

Filter track

The filter track appears only if filter effect automation has been recorded, by moving the crosshair during recording. The 2 lines represent the cutoff frequency and the resonance. With the filter track selected, only the mute and the delete buttons are enabled. Muting the filter track prohibits it from being played back, allowing you to experiment with new filter settings.

Add track buttons

The add piano track and add audio track buttons are located at the end of the track list:

- A *piano track* is a MIDI track, meaning a track with an instrument where notes can be recorded on.
- An *audio track* holds a wave form (a .wav file). Tapping this button takes you to the wave editor where you can record from microphone, import from the iPod library, AudioPaste, or open an audio (wav/mp3/ogg/AAC) file.

These buttons are not visible if the limit of 127 tracks is reached.

Mute button

The mute button mutes the selected track, thereby excluding it from playback. Muted tracks are darkened and are indicated by the mute icon.

Solo button

If one or more tracks are soloed, all the other tracks will be excluded from playback.

FX button

The FX button sets the effect bus of the selected track. In short, effects with FX enabled act only on tracks that have FX enabled. The other effects are applied on all tracks except the ones with the crossed out FX icon.
Per default, all standard effects apply to the track. Tap the FX button once to mark the track as an FX track, meaning that also the FX effects apply, in addition to the standard effects. Tap the button again to exclude the track from all effects (useful for raw drum and base sounds). The blue FX icon next to the track icon indicates each track's FX state.

Edit button

Tap the edit button with a piano track selected to enter the piano roll editor, or with an audio track selected to enter the wave editor.

Tip: Double tapping a track has the same effect as tapping the edit button. The piano roll editor will also zoom in on the area you double tapped.

Duplicate button

The duplicate button places a copy of the selected track directly beneath it, thereby copying its parameters and recorded notes. If an audio track is duplicated, the linked .wav file is also duplicated and renamed, e.g. *RobotVoice.wav* to *RobotVoice 2.wav*, so you can edit one track's wave form without affecting the other one.

Delete button

The delete button shows a popup with the options to delete or clear a track.

- **Clear** deletes all of the track's content (notes or audio regions) but leave the track in the list.
  Note: Since an audio track must always have at least one audio region, the first one will remain even if you clear the track.
- **Delete** removes the track from the list. If it contains pitch bended notes, a checkbox for clearing only the pitch bend data appears.

Pan knob/fader

The pan knob (or pan fader on the iPad) controls the track's stereo pan. Touch it and move your finger left or right to change the selected track's pan. The LCD displays the current value (left is -127, center is 0, right is +127). You can also inspect the changes by looking at the volume bars to the left of the track icon.

Volume fader

The volume fader displays and sets the track's volume. Its function is identical to the Instruments screen's volume fader. The LCD displays the current value, ranging from 0 to 100%.

Bar Editor

Tap the right side of the track view switch to display the bar editor. It is designed for quick, bar-wise editing of the song. Select any number of bars (measures) and move, duplicate, repeat, transpose, quantize or delete them.

Selecting

In contrast to the track editor, tracks cannot be selected in the bar editor and the currently selected track is not highlighted. Tapping a track's instrument icon selects all bars of the track.

New selection button

The left of the two selection buttons clears the current selection and starts a new one. Tap it, then draw a rectangle on the note area in order to select bars. Selected bars are highlighted.
Tip: tap a track's instrument icon to select the whole track.

Change selection button

The second selection button adds or subtracts bars from the existing selection. Tap the button, then tap an unselected bar to add it to the selection, or a selected bar to deselect it. Tap a track's instrument icon to (de)select the whole track.

Clipboard (copy and paste)

The clipboard holds a selection of bars which is retained even if another project is loaded. To copy bars from one song into another, make a selection, then tap and hold until the copy button appears. Tap copy, load the other song and go to the bar editor again. Tap and hold where you want to paste the contents of the clipboard, then tap the paste button.
Note: the clipboard buttons won't show up if an audio region is selected.

Move button

In the move mode, the selected bars can be dragged around. The song length will increase if you move bars past the end of the song.
The **snap** button, located to the left of the OK button, aligns the selection to bars if enabled, and allows free movement if disabled, which is especially handy for adjusting the position of audio regions.

Duplicate button

Tapping the duplicate button copies the selected bars and selects the new ones which can be moved around immediately. The copied notes will appear orange until they are moved, because they are congruent (identical) with the originals.

Note: Not moving the new notes will cause them to be played back with increased volume.

Repeat button

The repeat button copies the selected bars and automatically moves them to the right so that they start where the selection ended. The song length is automatically increased if the new notes reach past the song end.

Transpose button

The transposition menu contains semitone and octave buttons to de- and increase the selected note's keys by one semitone or octave. An octave equals 12 semitones. The LCD displays the number of semitones currently transposed.

Volume button (iPad only)

On the iPad, the volume button's function in the bar editor is identical to the one in the piano roll editor.

Quantization button

Tap the quantization button to bring up the quantization popup for aligning the selected notes on a grid.

Edit button

Tap the edit button with a piano track selected to enter the piano roll editor, or with an audio track selected to enter the wave editor. This button is disabled if the selection encompasses more than one track.

Delete button

The delete button deletes the notes in the selected bars.

Bar insert/cut button

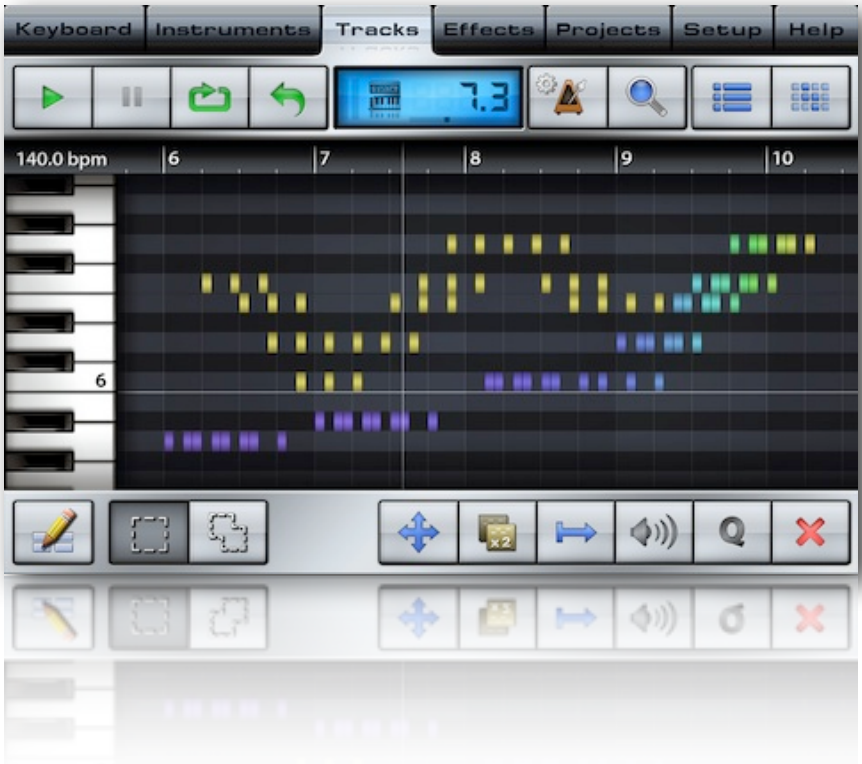
In the bar insert/cut mode, whole bars can be inserted and cut across all the tracks. Tap anywhere in the note area to select a bar of the song, which is highlighted in red.

The **cut button** deletes all notes in the selected bar and cuts it out, i.e. shifts all later notes one bar to left and decreases the song length by 1 bar.

The **insert button** inserts an empty bar to the left of the red highlighted area. This means that the song length is increased by 1 bar and all notes to the right of the line are shifted one bar to the right.

Piano roll editor

Double tap on a piano track in the track editor, or tap the edit button in either the track or the bar editor to enter the piano roll editor.



Piano roll view

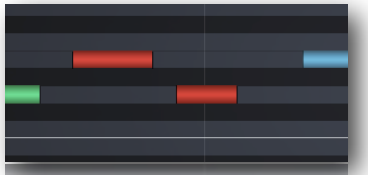
In contrast to the track and the bar editor, the piano roll editor displays only one track. The ruler is still the same, but the vertical axis now represents keys. The bright and dark stripes in the background make it easy to see if a note is on a white or a black key. White horizontal lines between the B and C keys mark the octaves. Notes are displayed as blocks, the color indicates the volume (velocity) from violet (silent) to green (default) to orange (loudest).

Vertical zoom

Slide and pinch on the mini keyboard to scroll and zoom vertically. Tap the zoom button (to the right of the LCD) to bring up vertical zoom buttons on top of the mini keyboard.

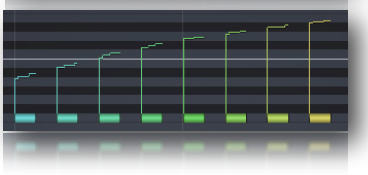
Red notes

Congruent notes, i.e. notes that are placed at the same position and have the same length, are displayed red in the piano roll editor. In most cases they are unwanted and should be deleted because they result in the note being played back with increased volume.



Pitch bend

Pitch bend is indicated by a line for each note block. Pitch bend can be recorded with the pitch bend wheel or the accelerometer. However, once recorded it cannot be edited. To re-record pitch bend for existing notes, select the overwrite recording mode in the pitch section of the Effects screen.



New selection button

By default, all notes are selected and every edit operation will modify all notes. Tap the left selection button and draw a rectangle over the notes to select a few of them. Selected notes are highlighted and the note range of the whole selection is displayed in the LCD.

Change selection button

Tap the second selection button and draw a rectangle over the notes to adds or subtracts notes from the existing selection.

Draw button

Tap the draw button to enter the draw mode where notes can be drawn by moving a crosshair and tapping OK.

The note beneath the crosshair is the one which will be created if you press the OK button. Move the crosshair to the desired location and tap OK (next to the crosshair) to create the note. The song length can be increased by dragging the crosshair past the song end. Press the rightmost button in the menu to exit the draw mode. The menu contains the following buttons:

The selected note button defines the length of the note to be drawn.

Tap the dotted note button to increase the note length by 50%.

The quantization button snaps the crosshair to a raster defined by the selected note button.

Move button

In the move mode the selected notes can be dragged around horizontally and vertically.
The menu contains the following buttons:

The selected note button defines the raster on which the movement is aligned or snapped to.

The OFF button disables quantization and allows for (almost continuous) movement with 1/192th precision.

Tap one of the the lock buttons to lock horizontal or vertical movement, which is very handy if you intend to transpose or position only.

iPad only: The octave down/up buttons move notes down or up by 12 semitones.

Duplicate button

The duplicate button copies the selected notes and selects the new ones which can be moved around immediately. The copied notes will appear red until they are moved, because they are congruent (identical) with the originals.

Note: Not moving the new notes will cause them to be played back with increased volume.

Repeat button (iPad only)

The repeat button copies the selected notes and automatically moves them to the right so that they start where the selection ended. The song length is automatically increased if the new notes reach past the song end.

Length button

The buttons in the note length menu have the same functions as in the draw mode. Either tap a note button to set the length of all selected notes, or move your finger horizontally in the note area to de- or increase the length.

Volume button

Tap the volume button and move your finger vertically in the note area (or move the fader below) to change the note's velocity (meaning volume).

The menu contains buttons and faders for more precise velocity editing:

- The average button on the left averages the velocities of all the selected notes and applies it to them.
- The gradient button toggles the velocity gradient mode, in which the two faders set the first and the last note's velocity.

The LCD displays the average velocity of the selected notes, or the velocity range in gradient mode, ranging from 0 to 127 (default is 100). The note color indicates the volume from violet (silent) to green (default) to orange (loudest).

Quantize button

Tap the quantization button to bring up the quantization popup for aligning the selected notes on a grid.

Delete button

Deletes the selected notes.

Quantization popup

Quantization is the most important step after recording because it corrects the timing. If the quantization raster (resolution) is one quarter note, every selected note is moved to the nearest raster point in a 1/4 note raster. Finding the right raster is crucial, therefore you might want to try out different settings and tap undo in between.

For example, if you played a fast melody and quantized it to 1/4, the timing will be ruined - in this case, just tap the undo button and try again with a higher resolution like 1/16. On the other hand, quantizing notes with a high resolution might not correct all timing errors you made when recording them.

Note buttons

Set the quantization raster (or resolution) by selecting a note. In practice, low resolutions like 1/4 are the right choice for slow notes. 1/16 fits most melodies, while at 1/32 you will only notice the difference if you recorded fast notes (like a fast drum pattern) or if the song tempo is very low.

Dotted button

The dotted note button increases the quantization raster by 50%. For example if the 1/8 note button and the dotted button are enabled, the quantization resolution is 1/6 of a bar.

Triplet button

The note triplet button treats the notes as triplets, meaning that the raster interval is multiplied by 2/3. This is good for swing and Jazz style melodies. Naturally, dotted and triplet cannot be enabled at the same time.

Quantize note lengths

Quantized note lengths means that that every note's end point will be quantized too. This is especially handy if you want to achieve legato.

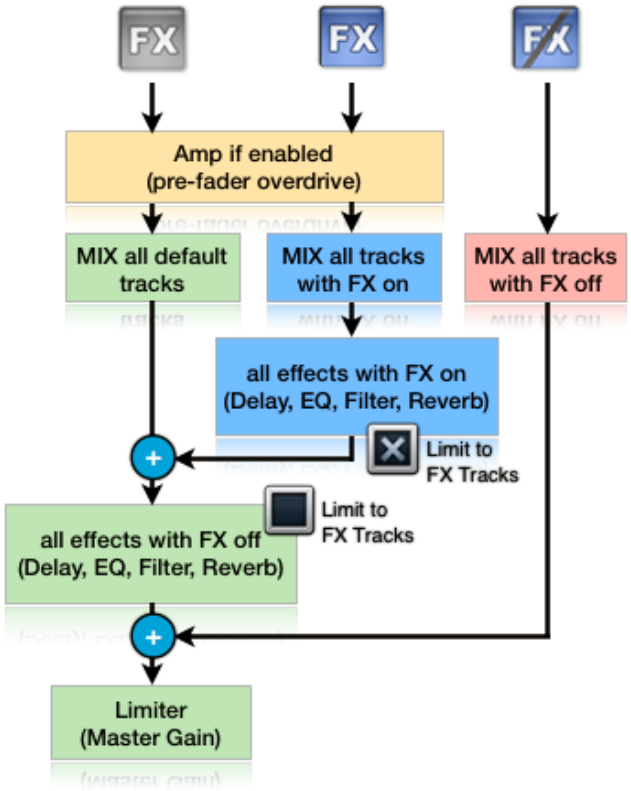
Soft (quantize 50%)

Soft quantization is good for keeping a human touch to the recording. It shifts every note by only 50%, keeping it slightly off the perfect timing.

Effects

Effect routing and busses

In short, effects with FX enabled act only on tracks that have FX enabled. The other effects are applied on all tracks except the ones with the crossed out FX icon. The following diagram illustrates the audio signal flow:



Tracks are treated separately depending on the FX bus setting:

- Effects are always applied in the following order: pitch bend, amplifier, delay, equalizer, filter, reverb.
- The amplifier effect is a pre-fader effect in order to achieve a high overdrive even on quiet tracks.
- All effects with the FX checkbox enabled are applied to the mix of all tracks with FX bus setting.
- This is added together with the rest of the tracks (those without FX bus setting)
- The rest of the effects are applied to the mix (those effects with the FX checkbox disabled)
- The tracks with a no-FX setting are now added to the mix.
- The limiter is applied, according to the master gain.

Common Controls

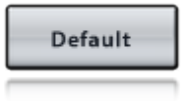
Power button

The power button enables or disables the effect. Disabled effects require no processing power.

Limit to FX tracks checkbox

“Limit to FX tracks” puts the effect into the FX bus, meaning that it will be applied only to those tracks which have FX enabled (blue FX icon in the track list). All the other effects are still applied to all tracks after the FX effects are processed.

Default button



The default button resets the effect's settings to the preset values.

Preview button

Tap the preview button multiple times to hear different notes played with the current instrument.

Limiter

Master gain

The master gain is not the device gain, but it controls the gain of the internal limiter. High values may lead to unwanted compression or distortion, low values may not produce the desired volume. Set the master gain fader so that the decibel meters barely hit the red areas for the loudest part of your song.

Note: In technical terms, this setting is required because if all playing instruments are mixed (added up), the resulting values will in most cases be much higher than 65535 (the 16 bit border) and clipping would occur. The limiter uses a smooth mathematical function (a curve) to compress larger numbers into the 16 bit range. The master gain fader controls the slope of this curve.

Device volume

The device volume popup’s fader has the same function as the iPhone's hardware volume buttons. If the iPhone's internal speaker is used (not recommended), be sure not to turn it all the way up. If external speakers are connected, set this fader to maximum and control the volume via the speaker's volume controls for the best audio quality.

Reverb

Reverb simulates a room of a certain type (hall / canyon / room) and size.

Reverb size

Controls the size of the sound space. In larger spaces, the reverb is audible for a longer period of time. The total size also depends on the selected style, e.g. the largest room reverb is smaller than the largest canyon reverb.

Reverb brightness

Lower brightness gives the impression of a darker room (using a low pass filter), while maximum brightness leaves all the high frequencies in the reverb.

Reverb stereo spread

Stereo spread results in the perception of stereo wideness of the reverb space. In technical terms, this fader sets the delay between the reverb reaching the left and the right channel.

Reverb mix

The mix fader controls the proportionality of the dry sound (the original sound without the effect applied) and the wet sound (the effect's result).

Reverb style

Each reverb style uses a different algorithm, thus the size fader has a different effect for each style.

Reverb quality

In technical terms, as you lower the quality, the reverb algorithm stays the same but the number of filters used in the reverbation filter chain decreases.

Tip: Reverb requires a lot of processing power. If audio stuttering occurs during playback, decrease the reverb quality.

Remember settings for each style (iPad only)

As you change the reverb type, the previous settings you made for this type are recalled. If this checkbox is disabled, the reverb faders remain unchanged when you change the reverb type.

On the iPhone, this setting can be found in the general setup.

Filter

The filter effect is a resonant low-, high-, or band-pass filter. The cutoff frequency and the resonance can be set by moving the crosshair, or by tilting the device if the accelerometer is enabled. The filter track in the track list holds the recorded events, which can be edited in the bar editor.

Resonance and frequency panel

The crosshair indicates the current values of the cutoff frequency (x axis) and the resonance (y axis). Move the crosshair to change the values. This can also be performed during recording.

Beware: high resonance values may lead to unpleasantly loud and high tones.

Snap back

If snap back is enabled and the crosshair is moved, it snaps back to its original location when you lift your finger from the screen.

Filter type

The filter type defines how the cutoff frequency influences the sound.

- **Lowpass**: All frequencies above the selected cutoff frequency are dampened (attenuated).
  The sound remains unchanged if the crosshair is in the lower right corner.
- **Highpass**: The effect behaves inverse to the lowpass. All frequencies below the selected cutoff frequency are dampened.
  The sound remains unchanged if the crosshair is in the lower left corner.
- **Bandpass**: Frequencies above and below the selected cutoff frequency are dampened.
  The sound remains unchanged if the crosshair is at the bottom center.

Filter accelerometer control

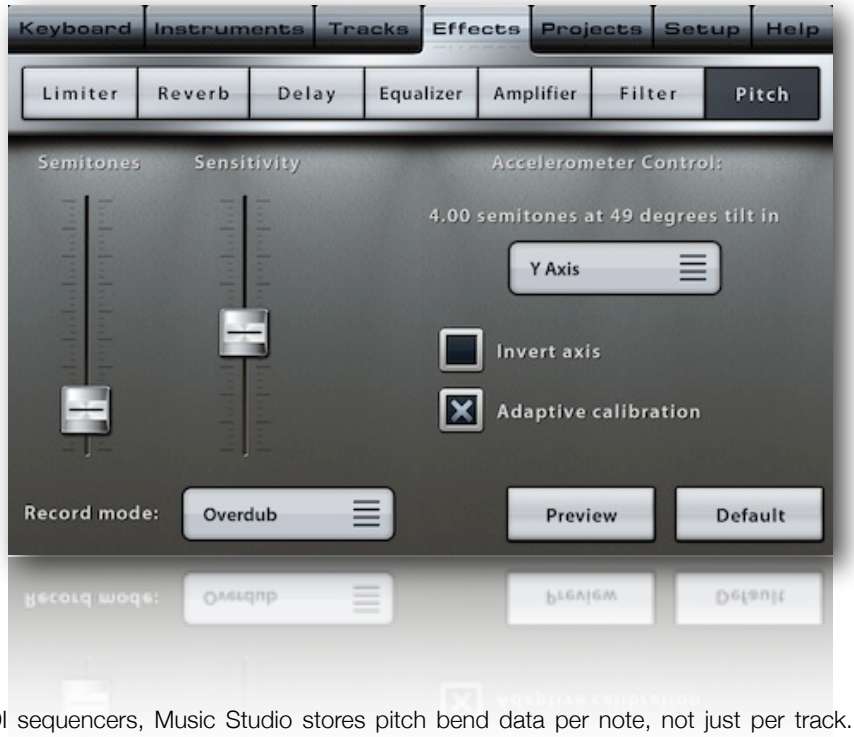
If the accelerometer is enabled, tilting it in any direction changes the cutoff and the resonance.

The **axis** can be set to X, Y or X+Y. For X or Y axis, both the frequency and the resonance change if the device is tilted in the selected axis. In X+Y mode, tilting along the x axis changes the cutoff frequency, while the y axis changes the resonance. Starting from the centered position, all 4 quadrants are symmetrical, i.e. tilting the device to the far left has the same effect as the far right.

With the **sensitivity** set to low, the device needs to be tilted almost 90 degrees to achieve the maximum effect. At high sensitivity, small movements are sufficient to set the filter values to their maximum.

Pitch

Pitch bend can be applied when playing live or recording with the pitch bend wheel or the accelerometer. In the piano roll editor, pitch bend is indicated with lines emerging from the notes.



Note: Unlike most MIDI sequencers, Music Studio stores pitch bend data per note, not just per track. This means that two simultaneous notes on the same track can have different pitch bend data (events). The big advantage of this method is that editing a note automatically affects the pitch bend data for this note, but does not affect any other notes on the track (other software sequencers commonly ask if you want to move the pitch bend data too, this is obsolete with this method).

Pitch bend semitones

The pitch bend range fader sets the number of semitones from 0.25 to 24 in both directions. This applies to the pitch bend wheel as well as the accelerometer.

Pitch bend sensitivity

The sensitivity fader only applies to accelerometer controlled pitch bend. It sets the tilt angle required to bend the full semitone range. The text to the right of the faders clarifies the behavior of the current setting (e.g. the device needs to be tilted 49 degrees to achieve a pitch bend of 4 semitones).

Pitch bend accelerometer control

Select *OFF* to disable accelerometer control and enable the pitch bend wheel, or select an axis and tilt the device to pitch bend.

Invert axis reverses the behavior of the accelerometer, e.g. moving down (instead of up) will increase the pitch.

Adaptive calibration starts the pitch bend at zero for each note that you trigger, regardless of the current device tilt.

Pitch bend record mode

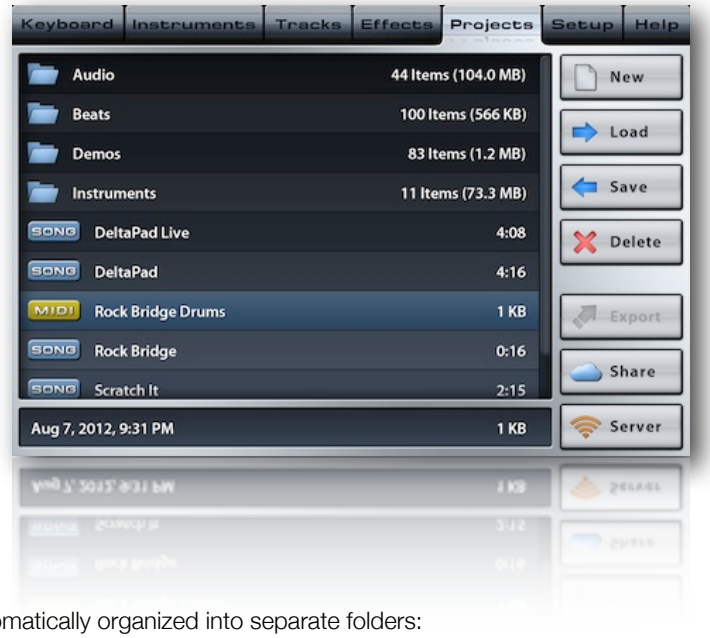
The recording mode controls how existing pitch bend data is treated during recording:

- **Overwrite** means that existing pitch bend events on the recorded track are overwritten by the new ones.
- **Overdub** mode preserves existing pitch bend data and stores the new pitch bend events only for newly recorded notes.

Projects

File list

The file list displays the type, name and length (or size) of every file and folder. Select a file to view its details (date, size) in the area below the list. Double tap a file or a folder to open it.



Different types of files are automatically organized into separate folders:

- The **Audio** folder contains all your recorded, imported and exported audio files. Tapping an audio file immediately triggers a preview, which simplifies the process of finding the file you are looking for. Audio files are automatically moved into this folder.
- The **Beats** folder contains the preset and user created beats, see the the chapter on beats below.
- The **Demos** folder is read-only and holds the factory demo projects and instrument demos (if instruments were purchased).
- The **Instruments** folder contains all the user instruments which are also listed in the Instruments screen's *User* section. Deleting an instrument here also removes it from the Instruments screen and vice versa.

The full version supports the following file types:

- **xms**: Music Studio project
  In Music Studio, songs are referred to as projects. They are stored in the .xms file format, a custom and small format for Music Studio which cannot be opened with any other software. It contains the tracks, song parameters, effect settings, keyboard layout, metronome and some user interface settings. Preferences from the Setup screen are **not** stored in the project.
- **beat**: Music Studio beat, see the the chapter on beats below.
- **wav, mp3, ogg, m4a** (AAC): audio files
- **mid, midi**: MIDI file
- **instr:** Music Studio instrument
  An instrument file stores all the samples and parameters of an instrument, like the sample mapping, loop points and volumes.
- **zip**: compressed archive

Beats

Beats contain one or more loop-able drum tracks which can be appended to a song. Tapping a beat immediately triggers a preview, which simplifies the process of finding the beat you are looking for. Tap the save button in the *Beats* folder to save the current song's drum tracks as a beat.

If the current song is empty, loading a beat applies its tempo and reverb settings and enables loop playback and recording. Otherwise, a popup lets you choose between appending the beat tracks to the current song and replacing all the current drum tracks with the beat's tracks.

In practice, beats are great to start a song with, and are also handy for trying out different rhythms for an existing song. When appending a beat to an existing song, you may want to use the bar editor's repeat button to manually loop (extend) the beat to the duration of the song.

New project button

Tap the *New* button to creates a new project. This action will remove all current all tracks and reset all effects, keyboard and drum pad settings.

Load button

Select a file and tap the load button to open it:

- Loading an **xms** file dismisses your current project. If the project requires instruments which are not present in your instrument list (i.e. not purchased), they are substituted by the closest matches from the available instruments and a popup informs you about that.
- Loading an **audio file** adds a new audio track to your song. The file is also moved into the *Audio* folder if it's not already there.

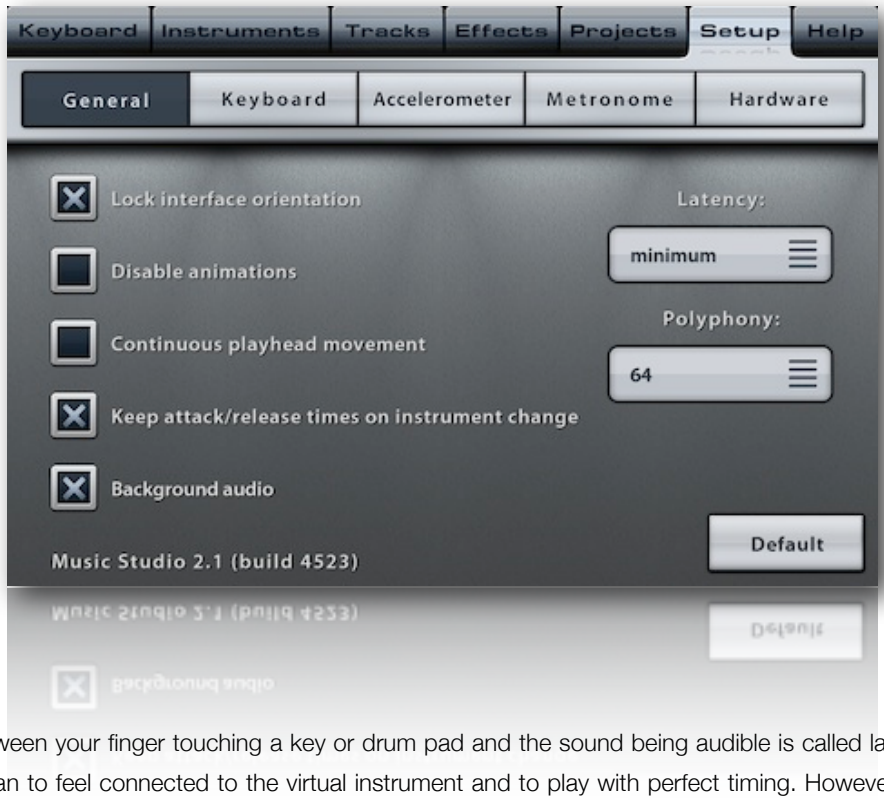
Tip: Double tapping a file has the same effect as the load button.

Transfer files to full version

If you purchased the full version, you might want to copy your song and all the files in the *Audio* folder from Music Studio Lite to the full version on the same device. Tap the "Transfer files to full version" button and wait for the full version to launch.

Setup

General setup



Latency

The time interval between your finger touching a key or drum pad and the sound being audible is called latency. Low latency is required for a musician to feel connected to the virtual instrument and to play with perfect timing. However, on slower devices, high CPU load can lead to stuttering in the audio output. This can happen if a complex song with many tracks is played back or if the device is busy with background tasks like mobile phone network processes. To avoid these performance dropouts, the latency can be increased, but the keyboard's responsiveness will suffer.

Tip: on older devices, choose very low latency for recording and a high latency for stutter-free editing and playback.

Polyphony

Polyphony defines the maximum number of notes that Music Studio can play simultaneously. High polyphony requires more CPU and can lead to stuttering during playback, while low polyphony can result in notes stopping too soon.

If it is set to 16 and at one point during playback, the song would require 17 notes to be played simultaneously, the oldest note will quickly be faded out to allow the new one to play. The required polyphony of a song depends on the number of simultaneous notes on all tracks, and heavily on the release times. During export to wav or AAC, the polyphony is automatically set to 128.

Note: In addition to this setting, the polyphony is automatically restricted to 16 for each individual track (8 on devices older than the iPhone 4).

Lock interface orientation

Per default, the interface is rotated to match the current device orientation. If the *Lock interface orientation* checkbox is enabled, the interface won't be rotated regardless of how you tilt the device.

Continuous playhead movement

In order to save CPU power, continuous playhead movement is off by default and the playhead in the Tracks screen moves only at every beat. Enable this checkbox to trade a lot of CPU power for more precise playhead movement. It may lead to playback stuttering.

Note: This checkbox is available only on the iPad, iPhone 3GS, iPod Touch 3rd generation and newer devices.

Keep attack/release times (iPhone only)

If this setting is disabled, each time you select an instrument its default attack and release time are set. If enabled, the current track's attack and release times are kept when you select another instrument.

On the iPad, this setting is located in the Instruments screen.

Background audio

Background audio means that playback continues while the app is running in the background. Start the playback of a song, click the home button and playback continues, even if you launch other music apps. Background audio has several practical uses:

- Play your backing track in Music Studio in the background while performing with another music app on top of it.
- Save battery by pressing the power button to switch the screen off during playback of a song.
- The full version supports CoreMIDI and virtual MIDI, which means that it can act as a sequencer for other apps and that other apps can trigger Music Studio's instruments while it's running in the background.

Note: If background audio is enabled, Music Studio will drain your battery significantly even if the screen is turned off or if other apps are running, even if Music Studio does not trigger any sounds. To quit Music Studio, double tap the home button, tap and hold the Music Studio icon, then tap the red minus icon.

Keyboard setup

Snap to white keys

The keyboard can snap after scrolling so that it always starts with a white key at the left screen edge.

Allow touches between black keys

White keys can be touched in the area between the black keys if this setting is enabled. Otherwise, white keys can only be touched on the area below the black keys.

Allow touches on key borders

By default, a tiny invisible border between the white keys won't react to touches. This minimizes accidental touches. If you find that the keyboard often doesn't react to your input, enable this checkbox.

German key labeling

The German key naming system uses the letter H instead of B and B instead of A#. If enabled, key labels on the Keyboard screen and the piano roll editor's LCD use this naming convention.

Velocity control

Enable velocity to control the note volume while playing on the keyboard. There are 4 options:

- **Mod wheel**: on the iPhone, the "*Mod wheel instead of pitch wheel*" setting needs to be enabled for the mod wheel to be visible and utilized for velocity control.
- **Touch position:** the volume depends on where a key is touched (upper end quiet, lower end forte).
- **Accelerometer X/Y**: Velocity can be control by tilting the device in the selected axis.

Mod wheel instead of pitch wheel (iPhone only)

By default, the pitch wheel is displayed in the Keyboard screen. Enable this setting to change it to the mod wheel which controls the filter effect or the keyboard velocity.

Auto quantization

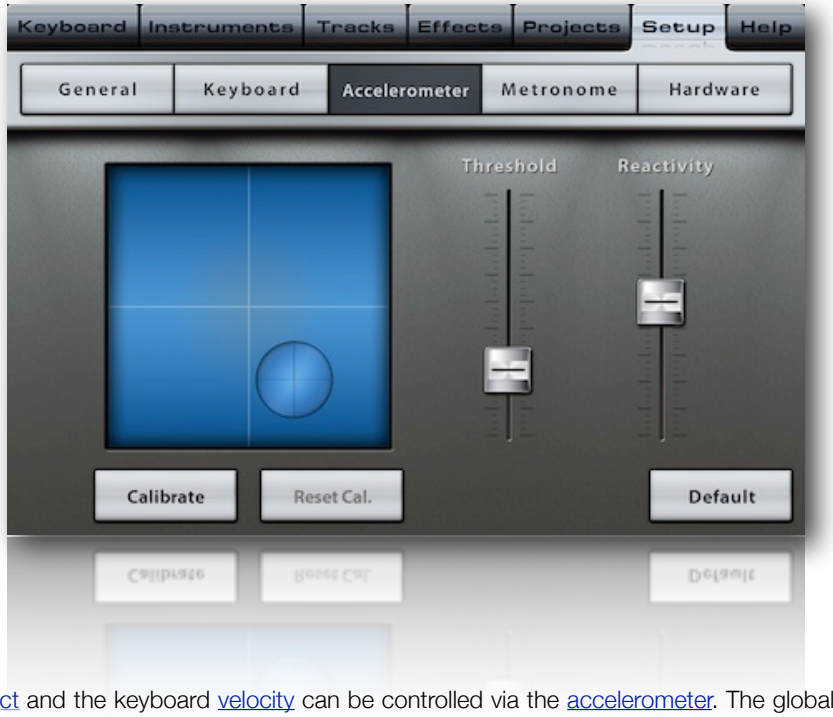
To speed up your workflow, quantization can automatically be applied after each recording on the keyboard or drum pads. The default setting is off. It is recommended for bass and drum recording.

Note: Automatic quantization can lead to undesirable results and is not undoable.

Transposition

If you tap a C on the keyboard with the transposition set to +2, a D will be played. The transposition range of -24 to +24 semitones allows you to play in a different key without having to learn the melody again.

Accelerometer setup



Pitch bend, the filter effect and the keyboard velocity can be controlled via the accelerometer. The global settings in this screen might come in handy if you use the accelerometer a lot. The crosshair in the accelerometer panel indicates the current device tilt as perceived by the app (after processing the calibration, threshold and reactivity settings).

Threshold

Device tilt is ignored until it reaches the angle set by the threshold fader. With a high threshold, the device can be tilted by about 15° until accelerometer vales are recorded.

Reactivity

High reactivity increases the effect of accelerometer sensor noise while low reactivity leads to sluggish behavior (which may be a desirable effect in some cases).

Calibration

Tap the calibrate button to set the current device tilt as the center position. The *Reset Calibration* button restores the original center setting.

Metronome setup

Volume

The volume fader controls the gain of the metronome tick sound.

Style

Choose between five metronome style. Each style consists of two sounds, one (the higher one) for the beginning of a bar, the lower sound marks the other beats.

Count in

When the record button in the Keyboard screen is pressed, the metronome will count one or more bars before triggering the song playback. This is called “count-in” and is handy for recording the first note at the very beginning of the song. Without count in, there wouldn't be enough time to play the first note immediately after tapping the record button. Count-in also helps you to get in line with the rhythm before you start playing (recording).

For example if count-in is set to 2 bars, the playhead position is at the beginning of the song (*1.1*) and you tap the record button, the playhead will count 2 bars from *-2.1*, *-1.1* until the recording starts at *1.1*.

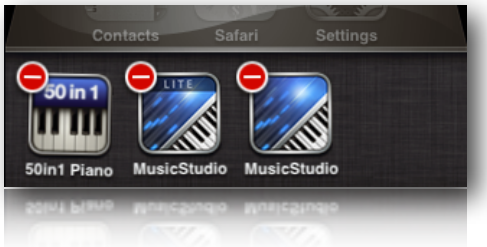
Count in only at the beginning of the song

If this checkbox is enabled, count-in is only applied if the recording starts at the beginning of the song.

Troubleshooting Guide

For support-related discussions, visit the forum at the Music Studio website.

Four steps to resolve most issues



1. **Quit Music Studio Lite**
   Tap the home button to get to the home screen, then double tap the home button to display the multitask bar. Close Music Studio (tap and hold the icon, then tap the red minus icon to close it).
2. **Reboot your device**
   Press and hold the *Home* and the *Power* buttons for about 10 seconds until the Apple logo appears. Don't slide to power off, hold longer!
3. **Disable iOS zoom**
   Launch the *Settings* app from the home screen. Go to *General*, *Accessibility*, and turn off the *Zoom*.
4. **Disable iOS multitasking gestures** (iOS 5 and later)
   Launch the *Settings* app from the home screen. Go to *General* and turn off the *Multitasking Gestures*.

Installing does not work

Apps are downloaded from Apple's servers, we as the developers have no control over the download and installation process. Music Studio is quite a big download and it rarely occurs that the progress bar (below the icon on the home screen) during downloading or installing does not change for several minutes. In this case, try the following:

- Make sure that you are connected to the internet via WiFi. A cellular connection is not recommended for such a bug download, it might also exceed your download plan.
- Tap the icon to pause it, then tap again to continue.
- Reboot your device (as described in the four steps above) and see if the download continues then.
- Download it on your computer with iTunes and then sync it onto your device.

If this doesn't solve the issue, please contact iTunes support at http://www.apple.com/support/itunes/
In general, you can re-download a purchased app as often as you wish (with the same account of course). The iTunes Store won't debit your credit card twice for the same product.

The Instruments tab is greyed-out

That's because an audio track is selected. Audio tracks cannot have MIDI instruments. Select or add a piano track to access the Instruments screen again.

There is a long delay between pressing a key and the audio output

Switch to a lower latency in the general setup and reboot your device as described above.

Audio stuttering occurs

Decrease the reverb quality, decrease the polyphony and increase the latency to reduce the CPU load. If the playback requires more CPU speed than your device can provide, audio stuttering occurs. Read more on this topic in the quick start guide.

The audio output sounds noisy

- Use headphones or speakers because the device's internal speaker cannot cope with the broad frequency spectrum of the instruments.
- Decrease the limiter's master gain to prevent clipping.

Some notes end too early during playback

Increase the polyphony in the Setup screen, but keep in mind that this may lead to stuttering with complex songs on older devices.